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Systematic investigation of fragmentation reactions using beams of stable and unstable projectiles

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Fragmentation reactions induced by stable and unstable medium-mass and heavy projectiles have been systematically investigated at the Fragment Separator at GSI. The large isospin fluctuations characterizing this reaction mechanism explain the possibilities for extending the present limits of the chart of nuclides, in particular in the neutron-rich side.

A particularly interesting channel, nucleon knock-out was carefully investigated using beams of stable and unstable tin isotopes between ^{110}Sn and ^{132}Sn . Glauber-type calculations point at the role of core excitations for the understanding the measured nucleon removal cross sections. For the most neutron-rich projectiles these excitations seem to be even beyond the single-particle picture. For the most neutron-deficient projectiles the role of core excitations change from the neutron to the proton sector, in agreement with similar measurements obtained at RIKEN using beams of ^{104}Sn and ^{112}Sn [1]

[1] L. Audirac et al., PRC 88, 041602 (2013)

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